

VLA CONTINUUM OBSERVATIONS OF BARRED SPIRAL GALAXIES

J. Antonio García-Barreto
 Instituto de Astronomía, Universidad Nacional
 Autónoma de México, Apartado Postal 877, Ensenada
 22830, Baja California, Mexico.

P. Pişmiş
 Instituto de Astronomía, Universidad Nacional
 Autónoma de México, Apartado Postal 70-264,
 México D.F. 04510, Mexico.

ABSTRACT

In this paper we report observations of NGC 613, NGC 1300, NGC 4314 and NGC 5383 using the VLA at frequencies of 1464.9 and 4885.1 MHz. These objects are a subset of galaxies from which we have searched for radio emission. Our selection criteria were: a) they are barred spiral galaxies preferentially with different Hubble type; b) they have a peculiar or hot-spot nucleus as reported by Sersic (1973, P.A.S.P. 85, 103) or Vorontsov-Vel'yaminov, Zaitseva and Lyutyi (1972, Soviet Astron. 16, No. 1, 71); c) they have been observed at far-infrared wavelengths by IRAS (1985, IRAS Catalogs and Atlases: the Point Source Catalog, Government Printing Office) and d) they are observable from the northern hemisphere. Their radio and far-infrared properties are summarized in Table I while their composite spectra are shown in Figure 1.

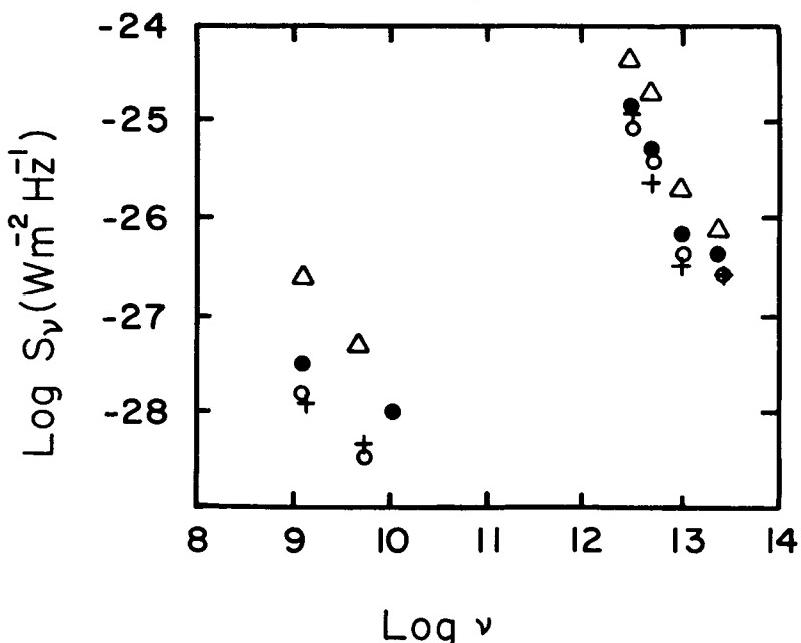


Figure 1. Composite spectra showing radio and far-infrared observations of NGC 613 (Δ), NGC 1300 (+), NGC 4314 (o) and NGC 5383 (●).

TABLE I. Radio and far-infrared properties.

GALAXY	TYPE	FREQUENCY (GHz)	S_{ν} TOTAL (MJy)	S_{ν} CENTRAL (MJy)	REF.	DISTANCE ^a (Mpc)	FIR FLUX DENSITY (Jy)		T_d (°K)	L_{FIR}^b (erg sec ⁻¹)	M_g^{FIR} (M_{\odot})
							12 _μ M	25 _μ M			
NGC 613	SB _b (rs)	1.4649	260 ± 10	82 ± 2	1,3	15.3	0.74	2.09	48.12	32	3.5×10^{43}
		4.8851	45 ± 5	15	1,3						6.8×10^7
NGC1300	SB _b (s)	1.4649	12	5	1,6	15.6	0.25	0.31	2.39	27	0.6×10^{43}
		4.8851		1	1						2.4×10^7
NGC4314	SB _a (rs) pec	1.4649	15 ± 3	~11	1,2	8.8	0.25	0.39	3.71	35	0.2×10^{43}
		4.8851	5 ± 1	~3	1,2						3.0×10^6
NGC5383	SB _b (s)	1.4649	34 ± 1	~20	1,4	23.5	0.36	0.65	5.23	33	2.1×10^{43}
		10.7	8.8 ± 1			5					3.8×10^7

REFERENCES: (1) THIS PAPER; (2) GARCIA-BARRETO, J.A., AND PISMIS, P., 1986, IN PREPARATION; (3) HUMMEL, E., VAN DER HULST, J.M., AND DICKEY, J.M., ASTRON. ASTROPH. 134, 207; (4) SANCISI, R., AND EKERS, R.D., 1978, ASTRON. ASTROPH. 62, [21]; (5) GRÄVE, R., KLEIN, U., AND WIELEBINSKI, R., 1981, ASTRON. ASTROPH. 95, 391; (6) HUMMEL, E., PEDLAR, A., VAN DER HULST, J.M., AND DAVIES, R.D., 1985, ASTRON. ASTROPH. SUPPL. SERIES 60, 293.

^a ASSUMING: $H_0 = 100 \text{ km s}^{-1} \text{ Mpc}^{-1}$.

^b ASSUMING: $L_{FIR} = 4\pi D^2 FIR$, WHERE $FIR = 1.26 \times 10^{-14} * [2.58 f_{\nu}(60_{\mu}\text{M}) + f_{\nu}(100_{\mu}\text{M})]$.

^c ASSUMING: $M_{g,FIR} = 100 M_{FIR}$, WHERE $M_{FIR} = 9 L_{FIR} / 3\sigma T^4 (Q_e/a)$.